Master thesis in Software Engineering and Management

Introducing the Implementation Workshop to a Technology Supplier working with a customer

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Göteborg, Sweden 2007

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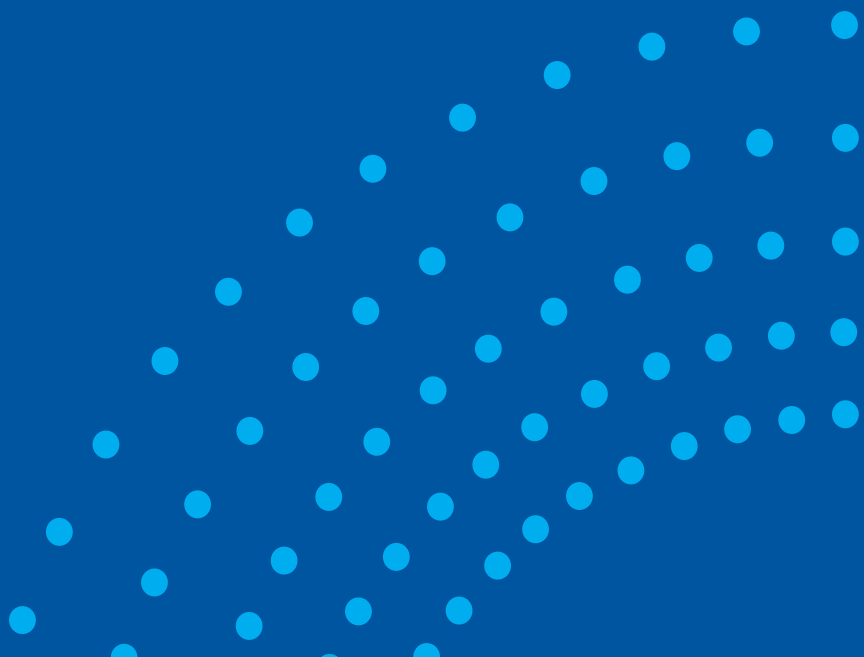

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ABSTRACT

Today many implementation projects fail to get satisfactory return of investment when diffusing IT systems. This problem when implementing can be expressed as the assimilation gap, which expresses the difference between IT systems that are acquired and those that are successfully deployed into an organization. One approach to cope with the assimilation gap is to use the implementation workshop. The implementation workshop is a one-day meeting containing six different stages. This study reports from a case study focused on an implementation project by a technology supplier, in which the conceivable consequences of introducing the implementation workshop into their practice were assessed. The study reveals three main consequences from using the workshop. Although future work is required to assess the actual success of this implementation project, we conclude that the use of the implementation workshop may help to decrease the assimilation gap for technology suppliers.

Keywords: Implementation of IT, diffusion of IT, assimilation gap, implementation workshop, technology supplier.

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Today many implementation projects fail to get satisfactory return of investment when diffusing IT systems. This problem when implementing can be expressed as the assimilation gap, which expresses the difference between IT systems that are acquired and those that are successfully deployed into an organization. One approach to cope with the assimilation gap is to use the implementation workshop. The implementation workshop is a one-day meeting containing six different stages. This study reports from a case study focused on an implementation project by a technology supplier, in which the conceivable consequences of introducing the implementation workshop into their practice were assessed. The study reveals three main consequences from using the workshop. Although future work is required to assess the actual success of this implementation project, we conclude that the use of the implementation workshop may help to decrease the assimilation gap for technology suppliers.

Keywords
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1. INTRODUCTION
Implementation of IT systems is often a disappointment for acquiring organizations (Cooper & Zmud, 1990; Eason, 1988; Rogers, 2003; Weinberg, 1997). There are many implementation projects that do not achieve the predefined objectives of their implementation efforts; they fail to meet the expectations of the acquired IT systems (Andersson & Nilsson, 2001; Börjesson, 2006a; Cooper & Zmud, 1990; Fichman & Kemerer, 1999; The Standish Group, 1999). There may be many reasons for this. One such reason may lie in how IT systems are diffused or implemented within acquiring organizations. The two key concepts, diffusion and implementation, are overlapping and describing similar phenomena (Andersson & Hanson, 2003; Fichman & Kemerer, 1999; Pries-Heje & Tryde, 2001), even though they are defined separately. There are characteristics that are different in the definitions. Rogers (2003, pp. 5-6) define *diffusion* as "the process by which an innovation is communicated through certain channels over time among the members of a social system." Rogers's definition of diffusion has no emphasis on whether the process is active or passive or on whether it is controlled or not. In contrast, Cooper and Zmud (1990) emphasize the effort needed to make diffusion happen. Cooper and Zmud argue that to make change happen you have to be actively involved and someone has to direct the change effort to achieve adoption of the innovation in an organization. This effort is called *implementation*, formally defined by Cooper and Zmud (1990, p. 124) as "an organizational effort directed toward diffusing appropriate information technology within a user community."

Often the decision to implement a new IT system is taken by management and the employees are told to adapt and use the new system whether they like it or not. But management cannot expect everyone to adapt a new IT system by just stating that they have to. This kind of demanded behavior will only affect people's espoused theories and not their theories-in-use (Argyris & Schön, 1996), i.e. is that they will say they do but in reality they do not.

Successful implementation of IT requires that people change their working habits and this is by no means a simple task (Weinberg, 1997). This implies the importance of accurate diffusion efforts to get in accordance with expectations. However, when introducing new IT systems it is common to spend a vast majority of the resources in the project on defining and developing the technology in relation to deploying it, and thereby forget about the diffusion. Only focusing on defining technology and then "roll-out" the new IT system within the target group with little adoption by the users is to err (Börjesson, 2006a). It is an inaccurate approach to assume that users only need to know how to operate a new IT system, e.g. "keyboard skills." This is inadequate from two perspectives (Eason, 1988) (1) not all full-time users attend full training course and (2) training people in how to operate the new system is only part of the adaptation people need to make to take advantage of the new IT system. A new IT system needs to be fitted with existing work practice, existing work culture, and existing technology. Further, people need emotional changes before they can make cognitive gains (Ciborra, 2001; Eason, 1988).

A way to illustrate the lack of diffusion when implementing IT is to use a model called the assimilation gap (Fichman & Kemerer, 1999). This gap illustrates the difference between acquired and deployed IT systems in acquiring organizations. Fichman and Kemerer argue that it is possible for an organization to err by adopting the right IT system but failing to diffuse it in a way that generates benefits for an organization. The gap can be seen as expressing acquiring organizations' success failure rate as the difference between the intended practices with acquired IT systems and the actual practices that emerge as a result from the implementation. According to Fichman and Kemerer (1999) it is deployment (i.e. diffusion) that makes organizational impact, and thus it is more important to understand the deployment curve than the acquisition curve.

One attempt to decrease the assimilation gap and thus increase diffusion is the implementation workshop (Pries-Heje & Tryde,

2001). This workshop is a one-day meeting with participants to be involved with the implementation effort focusing both on the IT system that is to be diffused, and on the diffusion process itself. Furthermore the workshop focuses on understanding the target for the IT system implementation, on deciding which roles to be played by different actors, on determining the whole product that suits customer needs, on designing an implementation approach, and on resolving implementation risks.

In previous research (Andersson & Hanson, 2003; Börjesson, 2006b; Pries-Heje & Tryde, 2001), the implementation workshop has been applied for organizations that diffuse IT within their own organizations. Included in this definition are organizations that have dedicated departments for assessing new technologies and methods, e.g. a research and development department. Such departments have authority and political acceptance within their organization.

However, to our knowledge, no research has previously tried to apply the implementation workshop to external actors that implements IT systems into organizations. One such actor is a technology supplier. Technology suppliers implement IT systems that change business processes and provide new tools for end users. According to a study about the Swedish IT industry (Landeström, 2006) there is a low degree of customer satisfaction regarding IT systems implemented by technology suppliers. Consequently there are many organizations with end users that do not use the systems as intended. Thus it is legitimate to believe that there exists a need to improve technology suppliers' current implementation practices, i.e. to decrease the assimilation gap for them. One possible solution could then be to use the implementation workshop.

Based on this, the following research question has been formulated:

- What are the conceivable consequences of introducing the implementation workshop to decrease the assimilation gap for a technology supplier?

The outline of this paper is as follows. In the following section (Section 2) we present the theoretical context whereas the next section (Section 3) describes how this study was designed from a research perspective. Section 4 presents the results of the study, and these are then discussed in Section 5. Limitations with the study and possible future work are presented in the next section (Section 6). The last section (Section 7) concludes the study.

2. THEORETICAL BACKGROUND

This section presents the theoretical concepts behind this study. The section is organized into three parts. The first part describes the assimilation gap. The second part describes the implementation workshop, whereas the third part describes technology suppliers.

2.1 Assimilation gap

The assimilation gap (Figure 1) expresses the difference between innovations that are acquired and those that are deployed (Fichman & Kemerer, 1999). Moreover the difference between these concepts is that deployed innovations have successfully been accepted and utilized in an organization. Therefore, Fichman and Kemerer argue that it is more important to understand the deployment curve than the acquisition curve, since it is the former that makes the organizational chance. Many organizations believe that innovations have been deployed when it has only been acquired.

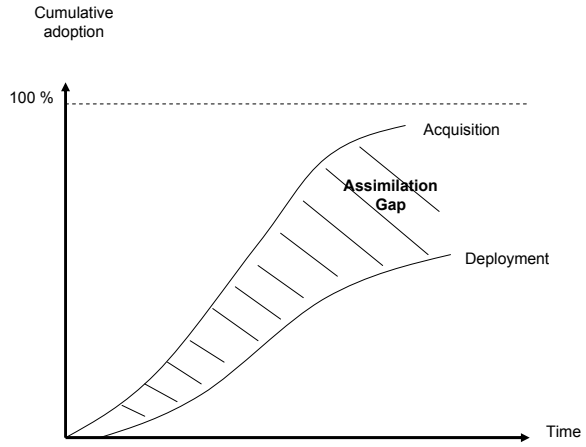

Figure 1: The assimilation gap, presenting the difference between acquired and deployed IT systems (Fichman & Kemerer, 1999)

Argyris and Schön (1996) also recognize the existence of an assimilation gap. Instead of acquired and deployed, they use the terms espoused theory and theory-in-use. Furthermore they state that it is insufficient to change people's espoused theories in order to improve a practice within an organization; the theories-in-use also has to be changed to create equality between espoused theory and theory-in-use.

High knowledge barriers may have a more negative effect on deployment than on acquisition (Attewell, 1992). The reason for this is that too much knowledge may be required in order to deploy an innovation; hence, organizations delay the acquisition of complex technologies before the sufficient knowledge of it has been reached.

Previous studies show that management commitment, i.e. support for the diffusion effort that ensures credibility and attention within the organization, is an important factor for a successful implementation project (Abrahamsson, 2001; Dybå, 2005; Grady, 1997; McFeeley, 1996). If management is committed to a project chances are good that the deployment curve will be affected: more people will use the new IT system than without the management commitment. Thus it is important to assure a management commitment already in the beginning of an implementation.

Also Bradford and Florin (2003) identify management commitment as an important factor. In addition, they present six more factors that influence a successful implementation. The first one concerns how compatible the new system is with the old one. The second one concerns how difficult the system is to understand and use. The third one concerns how much how the business process that has to be reengineered in order to fit the new system. The fourth one concerns how well the objectives with the new system are communicated to the end users. The fifth one concerns the level of training that the end users undergo with respect to the new system. The sixth one concerns the competitive pressure to adopt the new system.

2.2 Implementation workshop

One way to cope with the assimilation gap is to use the implementation workshop (Pries-Heje & Tryde, 2001). This workshop is intended to be performed during one day at an early point after initiation of a project, focusing on the innovation that is to be diffused within the organization. The implementation workshop is the result of many years of research and has been successfully adopted and used in the last six years with success in organizations such as Danske Bank (Pries-Heje & Tryde, 2001), Ericsson (Börjesson, 2006b), and Volvo IT (Andersson & Hanson, 2003).

The workshop consists of six stages divided into three phases: analysis, design, and planning (Figure 2).

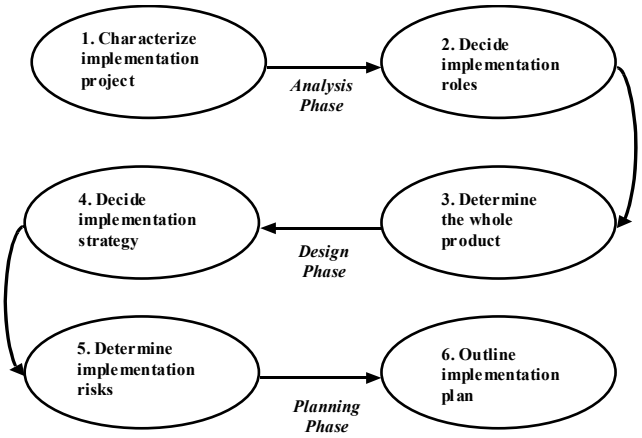

Figure 2: The implementation workshop, with its six stages divided into three phases (Pries-Heje & Tryde, 2001)

In the analysis phase, the focus is first on creating a common understanding of the implementation project, e.g. why the innovation should be diffused. The next stage in this phase is to assign persons, according to the "role model" (Pries-Heje, 2003) to five different roles that each will fill a specific function during the project.

In the design phase, the "whole product" (Moore, 2002) is defined, i.e. what the users expect to be included in the innovation. Also, it is decided in this phase which type of implementation strategy to use, e.g. if the users should shift to a new system all at once or if it should be tested on a small user group first.

In the planning phase, potential risks are identified and a mitigation plan is made to avoid the most important of those. In the last stage of the workshop, an implementation plan is outlined that describes when the activities from the previous stages should be performed.

The time to use the implementation workshop is right after the project analysis (or when the contract with the customer has been signed), so that the project scope is defined. It is recommended between three and six participants from the customer side in an implementation workshop. Customers should represent the project as (1) the project manager and project member(s), and (2) internal customers as the one who is responsible for the requirements and between one and two end users. Two facilitators guide the workshop members through the different activities. The results from the activities in an implementation workshop are documented in a report by the facilitators.

After using the implementation workshop, the project will have an implementation plan comprising the activities identified during the workshop stages. The project will also have a basis for calculating cost estimates of the implementation.

2.3 Technology suppliers

Technology suppliers are commercial companies or the academy, supported by the industry, which produce, adopt, or extend technology (Buxton & Malcolm, 1991). The existence of these technologies is then published academically, or supplied to clients with the intention to receive return on sales. Throughout this paper we will focus on the technology suppliers that are commercial companies and whom supplies their own technology to clients. In the process of supplying technology it is often included for a technology supplier to provide their clients with resources and services before, during, and after an implementation. As an example, they can provide clients with project managers, guidelines, and training. As described, a technology supplier works as an external actor when working with a customer in their organization.

3. RESEARCH APPROACH

This section is organized into three parts. First, the overall research strategy is described. Second, it is described where the study was performed. Third, the methods for collecting data and analyzing it are described.

3.1 Research strategy

The purpose of this study was to assess the conceivable consequences of introducing the implementation workshop to decrease the assimilation gap for a technology supplier. With this purpose we chose a qualitative approach as it is well suited when the purpose is to understand and describe not yet known phenomena. In contrast to a quantitative method which aims at explaining and measuring predefined phenomena, our choice of approach enables the researcher to penetrate a specific problem. With a qualitative approach, it is possible to get close and collect interesting and relevant data about the phenomena in the selected context (Backman, 1998): this was our aim with the study.

As qualitative method, we performed a case study (Yin, 1994) with a single case and a single project. A case study can be positivist (Yin, 1994), interpretive (Walsham, 1993), or critical (Held, 1980). We chose an interpretive case study. The reason for this was for us to better understand individuals' interpretations of a phenomenon; in this case, interpretations about the implementation workshop.

3.2 Research site

The study was performed at Zipper by SEMCON AB (referred to as just Zipper henceforth), an organization who implements IT systems to both Swedish and international customers and where a customer organization typically has around 500 employees. Zipper is a subsidiary to SEMCON AB and resides on three sites in Sweden (Stockholm, Göteborg, and Malmö) and has in total 110 employees.

This study was divided into two phases where phase 2 was performed during spring 2007 and phase 1 performed during fall

2006 (Neeman & Sarlin, 2006). In phase 1, Zipper was assessed and a tailor-made implementation workshop was designed for them called the Zipper implementation workshop (ZIW). The study revealed that Zipper sometimes has problems with the assimilation gap when working with their customers. In some cases the customer do not use the acquired technology as intended, for example, when Zipper six month after completion ask their customer how it works for them they say that they do not use it at all. This is also shown when Zipper scrutinizes the actual use of customers' applications packed into Zipper's product FastTrack (solution for managing the infrastructure of PC clients in an organization).

One of the projects by Zipper was selected for this study. The purpose of the project was to implement FastTrack into a company based in Gothenburg. The estimated time to implement this was 5 months. The customer has around 340 employees, divided into 20 units. For easy reference we will call the customer BRADI in the remainder of the paper.

3.3 Data collection and analysis

The ZIW was performed at BRADI in March 2007. Moreover, the workshop lasted three hours and the participants were the project manager from Zipper, the project manager from BRADI, one senior end user, the sponsor of the project, and the authors of this paper as the facilitators. In order to capture everything that was discussed and decided during the workshop, we audio-taped the whole meeting. This recording was directly transcribed after the meeting and then summarized to include all important decisions made. After the workshop we encouraged the workshop participants to provide spontaneous and informal feedback to retrieve their opinions about the workshop. About 2 weeks after the workshop, we conducted semi-structured interviews with the project managers from Zipper and BRADI. The purpose with these interviews was to check whether the workshop was perceived to increase the chances of a successful diffusion; and if they felt something could be added or removed from the workshop.

The data from the spontaneous and semi-structured interviews was analyzed through coding and categorization (Denscombe, 2003). The purpose with such analysis was to bring structure and organization of data, so that we could relate data to our specific study. This type of analysis was made through three iterations. In iteration 1, the data from the spontaneous and semi-structured interviews was analyzed and interview data was put into a list. In iteration 2, each data type was assigned with a keyword. In iteration 3, relating keywords were grouped together and each group was assigned with a key theme name.

4. RESULTS

The results of this study are described in this section, organized into four parts. The first part presents the outcome of the performed workshop at BRADI. The second part presents spontaneous reactions from the participants of the workshop. The third part presents the results of the semi-structured interviews. The fourth part presents the results of the data analysis with our coding and categorization technique.

4.1 Zipper implementation workshop

During the workshop a number of activities were performed where the workshop members openly discussed and made consensus decisions on a number of important diffusion issues. At this session the fourth stage of the implementation workshop (Pries-Heje & Tryde, 2001) was excluded due to it was already decided that the actual implementation of FastTrack should follow Zipper's already established method for this. In addition we only present the results from the two last stages as it is the planning phase that contributes with activities to be included in the project plan. The workshop lasted for 3 hours and in the first stage they discussed the scope and background of their project which took 30 minutes. The second stage emphasized the roles that have to be played during the project, while the third stage focused on the "whole product" to provide a more usable product (Moore, 2002). These two stages lasted for 40 minutes each. In the fourth stage a risk analysis (Table 1) was conducted that emphasized on diffusion risks, which took 30 minutes. For the risks identified, a number of activities (Figure 3) were developed that span over all stages which later where organized into a rough implementation plan in the final stage. The final stage lasted for 40 minutes.

Table 1: The risk list identified during the workshop focusing on diffusion risks where the three most severe risks are ranked

Risk	Proba-bility (0-5)	Conse-quence (0-5)	Weight (s*k)	Rank
Important roles not defined	5	5	25	1
Management support/lack of commitment	4	4	16	2
Insufficient information	3	4	12	3
Resistance to change	3	3	9	
Not enough resources	2	4	8	

For each risk identified a number of activities (Figure 3) were mapped to prevent or mitigate its impact on the project. These activities were transferred into a Gantt-chart where dates and dependencies were assigned to each activity:

- Activity 1 and 2 cover risk: "Important roles not identified".
- Activity 3, 4, and 5 cover risk: "Management support/ lack of commitment" and "Resistance to change".
- Activity 7, 8, 9, 10, and 11 cover risk: "Insufficient information to concerned actors".

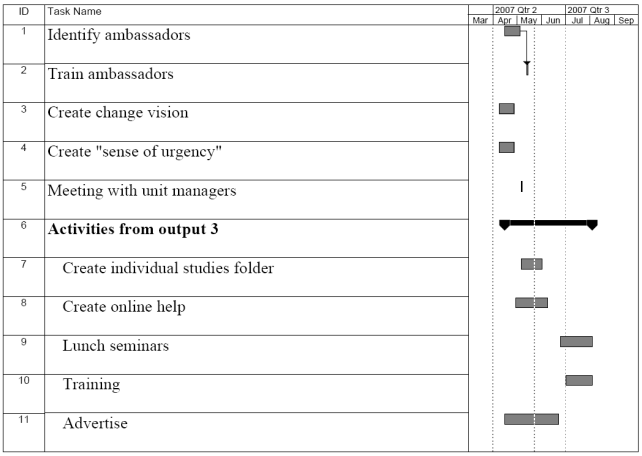

Figure 3: Gantt chart for the project displaying the identified activities for assuring successful implementation

4.2 Spontaneous interviews

Directly after the workshop the participants were asked about strengths and weaknesses with the workshop. They were encouraged to express their opinions about the workshop such as, what was useful, hard to understand, or could be improved. All workshop participants were engaged in the discussions and had an immediate positive experience from the diffusion workshop and thought it was well worth the three hours. The workshop participants were in general pleased with the workshop. It provided them with a comprehensive picture of the implementation, including a common view of project tasks and goals, important roles, different services, and diffusion risks. In Figure 4 citations from the workshop participants can be found.

"…the workshop was very good as it focused on nothing else but implementation and discussed the product and the diffusion activities it selves…" *(Internal project manager)*

"Ambassadors are important for successful implementation and now we know from which category we have to find them, further we know that we have to help them in their task of helping the project." *(Senior end-user)*

"…The workshop opens the eyes of the customer for the need of communication of the new application throughout the organization. The implementation does not happen by itself…" *(External project manager)*

"The projects budget does not cover all aspects of the implementation effort such as directed services and use of professional change agents. These aspects of the implementation seams to be a project of its own, running in parallel." *(Sponsor)*

Figure 4: Citations from the spontaneous interviews

They believed it was valuable to focus on creating an understanding of the reason "why" before the actual implementation starts. They also found it valuable to focus on the importance of defining, reporting and informing all stakeholders affected by the project. When there is a common understanding of the reasons behind and the benefits of implementing the new system into the organization they believe the actual implementation would be faster. The focus on people creates an awareness of issues that had not been dealt with this early in the implementation process. Normally these issues are dealt with when the resistance towards the change is a fact and the new IT is not used as intended. Using this workshop help raise the awareness of the people issues and therefore it is possible to take actions in beforehand to mitigate the effect of people resistance. One of the major strength perceived by the workshop participants is that it focuses solely on the single implementation project and the specific customer's unique culture. The advantage of this focus is that the actions derived from the workshop are the most suitable ones for the specific organization.

It was also clear that the use of the role ambassadors, one of the roles of the "role model" that has to be enacted, is a major success factor for the project to create acceptance by the end-users. They appreciate the importance of selecting the right people as ambassadors and the need of providing them with the right means for achieving their goals. Using change agents (Burnes, 2004; Börjesson, 2006a; Kautz et al., 2001; Weinberg, 1997) helping the ambassadors with the face-to-face level of the communication to diffuse the new technology were appreciated by both sides (Zipper and BRADI) of the workshop participants.

The "whole product" concept is central for the diffusion success. The workshop participants appreciated the need for preparation of directed services for different target groups. When developing the "whole product" there exist an opportunity to sell more services for the technology supplier to the customer, as this activity will open their eyes for directed efforts to assure successful diffusion. However, it is important to not overwhelm the customer with new add-ons as it could confuse them. Here it is important to not push to hard and sense the customer's ability to receive new information.

Risk analysis with diffusion in focus was considered to be valuable as it was identified to be a base for arguments for handling the end-users. To start thinking about these aspects up-front in the project shape a foundation to start working on the arguments to be used in the communication in both mass media and face-to-face level. It was also appreciated by the workshop participants to come up with a rough plan of the identified activities. It illustrated clearly that diffusion activities has to be started in the beginning and not as "fire fighting" at the end of the project when the new IT system already are in place.

As a weakness with the workshop, the participants mentioned that the projects budget does not cover all aspects of the implementation effort such as directed services and the use of professional change agents guiding the ambassadors. They argued that these activities derived from the workshop seemed to be a parallel project. On the other hand, the technology provider sees an opportunity to increase their services toward the customer.

Regarding our request for opinions about issues hard to understand and areas of improvement, we did not receive any comments.

4.3 Semi-structured interviews

The semi-structured interviews were held two weeks after the workshop was performed at BRADI with the project managers i.e. internal and external. There opinions about the workshop had not changed in any direction but they had come up with one improvement suggestions. They argue that such a workshop could be performed in several occasions if the customer has a distributed organization, e.g. many sites in different locations. In such organizations there is a need for many ambassadors and there may even be different cultures in the various sites within the organization.

On the good side is that Zipper's projects always concern the same type of product but in various contexts. Therefore their projects are relatively easy to anticipate with respect to scope and this is believed to be a success factor by the project managers. It is also believed that to be well prepared up-front in this kind of projects you will have the ammunition to convince end-users, and thereby increase deployment.

4.4 Coding and categorization

Our categorization was obtained by interpretation of interview data from the spontaneous and semi-structured interviews through three iterations. The results from the two first iterations are interview data with relating keywords (Table 2).

Table 2: Interview data connected to keywords as a result from iteration 1 and 2 of the data analysis

Interview data	Keywords
comprehensive picture of the implementation	Comprehensive
a common view of project	Common
… it focused on nothing else but implementation...	Focus
Ambassadors are important for successful implementation…	Ambassadors
ambassadors is a major success factor	Ambassadors
the "whole product" concept is central	Whole product
… need of communication…	Communication
projects budget does not cover all aspects…	Budget
project of its own	Own project
important roles	Stakeholders
…raise the awareness of people issues…	People
…solely on a single implementation…	Focus
…base for arguments…	Communication

The results from the third iteration are the three key themes ample, motivation, and cost (Table 3). The ample theme are those supporting an overall view and understanding of the project, the motivation theme concern incentives for adapting the new IT and the cost theme concern those issues regarding monetary matters.

Table 3: Keywords connected to key themes as a result from iteration 3 of the data analysis

Keywords	Key themes
Comprehensive, Common, Focus, Stakeholders, People	Ample
Ambassador, Whole product, Communication	Motivation
Budget, Own project	Cost

5. DISCUSSION

This section is organized into three parts. In each part, one of the key themes derived from our data analysis is discussed: the first part concerns ample; the second part concerns motivation; and the third part concerns cost.

5.1 Ample

One concern when implementing IT is how to manage diffusion so that the organization will benefit from the innovation. The approach used in this study for organizational implementation comprise a set of stages that help implementation projects find detailed and targeted improvement plans. From the workshop participants we have been told unanimously that they appreciate the workshop as it provides them with a comprehensive picture of the implementation for the specific project. They believe that this approach will help the project organize the implementation to assure successful implementation as it address diffusion problems by encouraging discussions about scope, purpose, roles, target groups, risks, etc. (Bradford & Florin, 2003; Eason, 1988; Gallivan, 2001). It was clear for all participants that this workshop is a mean for generating supplementary services that can act as transforming ideas to move the organization from old status quo to new status quo (Weinberg, 1997).

In addition, the focus on diffusion risks was considered to be a new phenomenon for the workshop participant. In Table 1, the risks identified during the workshop are listed, and these are the same challenges as most implementation initiatives face. One major difference experienced by the participants compared to previous implementation planning efforts was the focus on key roles (Pries-Heje, 2003). The workshop identified major stakeholders and target groups affected by the project. The purpose of the second stage was to give full consideration to who occupies or is supposed to occupy the key roles of the implementation initiative. This was considered to be valuable as the kind of implementation projects this context withhold is about getting people to change behaviour with IT and not produce IT. The scrutinized project in this workshop is about changing from one state to another state. Stakeholders have different views on IT and therefore it is important to define different services (Moore, 2002) to reach all stakeholders and the implementation workshop provides a mean for initiate actions that improve diffusion.

The commitment from management (Abrahamsson 2000, 2001; Bradford & Florin, 2003) is as mentioned before a key factor for the success of the implementation initiative as well as the key roles. The organizational structure at BRADI is well established and it should therefore not be any uncertainties about who constitutes the management. It is very likely that the management will be committed to this initiative as top managers

participated in the workshop and has active roles and endorse the project.

Further the risk list indicates that negative reactions to change are likely to occur. Negative reactions to change is natural (Weinberg, 1997) and these reactions can make the initiative fail. Uncertainty about the future creates resistance, and to mitigate or eliminate uncertainty all involved actors must have the same perceptions about the future. Information about the initiative is crucial for the success of the effort and here the ambassadors have an important task. Ambassadors (or opinion leaders) are individuals who provide information and advices to other individuals (Rogers, 2003) and they are well known as key success factors for thorough diffusion. In this project they still have to find the appropriate ambassadors to make diffusion happen.

5.2 Motivation

Failing to understand the needs of the target user groups is a common mistake of IT implementation efforts (Kotter, 2007). Mathiassen et al. (2002, p. 258) talk about communication channels in a social system in order to perceive this common understanding of the users needs, and argue that personal communication channels (as opposed to mass media channels) are generally most effective when it comes to convincing a target group of an innovation's value. In our context we face a particular type of communication in which the message content that is exchanged is concerned with a new idea, e.g. a new IT system, and this type of communication is called diffusion (Rogers, 2003, p. 17). Diffusion is about information exchange and consist of one sender and one or several receivers. This process of information exchange is a communication channel and it determine the condition under which an idea will or will not be conveyed to the receiver. At Zipper the normal way of communicate is through mass media channels as they are the most rapid and efficient channel to inform, create awareness-knowledge, about the new innovation. Mass media channels, such as newspapers, newsletters, etc. are those where Zipper can reach an audience of many and it is relatively cheap. On the other hand, interpersonal channels are more effective in persuading end-users to accept the new innovation. Interpersonal channels involve face-to-face communication between the sender and the receiver(s) and this kind of personal communication channels are generally most effective.

The workshop described in this paper can help implementation projects to find the right mix of mass media and interpersonal communication channels to persuade the end-users adopt the new innovation. Implementation of IT into organizations is often about changing the way people work and to introduce new ways of working. It is common for technology suppliers to only focus on the acquisition curve and forgot about the deployment curve (Fichman & Kemerer, 1999). Only focusing on the acquisition curve and to assume that what users need to know is how to operate the new equipment, e.g. "keyboard skills". This is inadequate as training people in how to operate the new system is only part of the adaptation people need to make to take advantage of IT. People need emotional changes before they can make cognitive gains, and therefore it is important to prepare the end-users before the implementation. This is in accordance with one of the factors by Bradford and Florin (2003) where the level of training of the end users is emphasized.

In addition to help end-users adopt the new IT successfully one can focus on implementing new ways of working that support their daily work. This may seem obviously but unfortunately it is not the way Zipper work today. When they work with a client they do not question the appropriateness of the set of applications they pack into their product FastTrack that they install at the customer sites. However, when the new IT infrastructure is implemented at the customer sites it is Zipper who will receive all negative responses and critique. One way to mitigate the critique and increase end-user satisfaction is to follow the insights from previous successful attempts to implement IT that support end-users daily work (Börjesson, 2006a). This can be done trough focus on interpersonal communication. Börjesson describes many successful advices that can be followed, such as different tactics to help end-users commit to innovations and methods to follow that have proven to work in the telecom sector. A central concept in this interpersonal communication is the change agent. Since the change agent is the person who acts to assure successful diffusion and to accomplish diffusion, the change agent needs to understand why implementation initiatives can progress slowly or not at all. This understanding let change agent's help end-users commit to the innovation and also it help the organization to implement new innovations that support their daily work.

5.3 Cost

It became apparent during this study that the identified activities could help the implementation project to succeed. However it also became clear that the identified activities were out of the projects budget. It is important that the project has a management who endorses and will assign the extra resources needed to execute the identified activities to assure successful diffusion. It is the customer who will finance the project and live with the results as well as hopefully collect the return of investment. Therefore they can not only rely on the technology supplier to secure their investment and make diffusion happen. It is important that the project is well anchored within the customer as well as the technology supplier organizations, and the workshop described in this study is a mean to anchor the project.

From the discussions and the interviews it has become clear that there exist a chasm in perceptions for some of the responsibilities. The customer expects that the supplier will not only implement the technology and provide training and support. They also expect the technology supplier to make the change happen, i.e. make it diffuse successfully.

In addition the technology supplier views the deal as strict technology implementation with additional training and support. They do not see it as their responsibility if the customers do not use the technology when they have fulfilled their undertakings. On the other hand, they want the customers to use the technology in the intended way so they can gain the expected benefits from it. If so, they are more likely to build a long lasting relationship with the customer and probably thereby increase their amount of services delivered to the customer. Zipper believes the workshop is an excellent mean for additional add-ons to the contract in form of directed services and mentoring of ambassadors. This is derived from the statement of the project manager form Zipper "…The workshop opens the eyes of the customer for the need of communication of the new application throughout the organization. The implementation does not happen by itself…."

6. LIMITATIONS AND FUTURE WORK

The implementation workshop was only performed in one case at one specific technology supplier and therefore our results are not completely generalizable. Future work is to extend the work with multiple cases. Furthermore we could conduct interviews after the implementation projects are completed to validate the approach. Here we can ask questions about what they have used from the implementation workshop, if it has been a successful implementation and we could measure how successful the implementation workshop was for Zipper. One way to measure the success could then be to use two of the success variables by Delone and McLean (1992, 2002): *use* and *user satisfaction*. The former one concerns how many that uses the system while the latter one concerns how satisfied the users are.

7. CONCLUSION

We have presented and analyzed experiences from one attempt to improve the diffusion of IT for the technology supplier Zipper. The aim of this study was to understand the conceivable consequences when introducing the implementation workshop in a technology supplier organization and to contribute to the body of knowledge about the use of the implementation workshop.

In this case study effort three key consequences were derived regarding the use of the implementation workshop: ample, motivation, and cost. The ample and motivation themes are regarded to be positive as they provide a comprehensive picture of the implementation effort and incentives for adapting the new IT. The cost theme is regarded to be negative as the project budget may not cover the activities to be performed.

To conclude we find the implementation workshop to be a promising approach to assure successful implementation of IT and to decrease the assimilation gap for a technology supplier when working with a customer.

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REFERENCES

Abrahamsson, P. (2000). Is Management Commitment a Necessity After All in III: Software Process Improvement? *Euromicro '00,*Maastricht, The Netherlands, IEEE Computer Society, 246-253.

Abrahamsson, P. (2001). Rethinking the Concept of Commitment in Software Process Improvement. *Scandinavian Journal of Information Systems, 13*, 69-98.

Andersson, I., & Hanson, K. (2003). Technology Diffusion in a Software Organization. *Licentiate Thesis*. (ISSN: 1651-4769).

Andersson, I., & Nilsson, K. (2001). Diagnosing Diffusion Practices Within a Software Organization. (A. Ardis, & B. Marcolin, Eds.) *Diagnosing Software Product and Process Innovations*.

Argyris, C., & Schön, D. (1996). *Organizational Learning II - Theory, Method and Practice*. Reading, Massachusetts: Addison-Wesley.

Attewell, P. (1992). Technology Diffusion and Organisational Learning: The Case of Business Computing. *Organization Science, 3*(1), 1-19.

Backman, J. (1998). *Rapporter och uppsatser*. Lund: Studentlitteratur.

Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems, 4*, 205-225.

Burnes, B. (2004). *Managing Change: A Strategic Approach to Organisational Dynamics* (4th ed.). Harlow: Financial Times Prentice Hall.

Buxton, J. N., & Malcolm, R. (1991). Software technology transfer. *Software Engineering Journal, 6*(1), 17-23.

Börjesson, A. (2006a). Making Software Process Improvement Happen. *Doctoral Thesis*. (ISSN: 1652-490X;4).

Börjesson, A. (2006b). Improve by Improving Software Process Improvers. *International Journal of Business Information Systems, 1*(3), 310-338.

Ciborra, C. U. (2001). In the Mood for Knowledge: A new study of improvisation. *Workshop on Social Study of Information Technology*. London: London School of Economics and Political Science.

Cooper, R., & Zmud, R. (1990). Information Technology Implementation. *Managment Science , 36* (2), 123-139.

Delone, W. H., & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research, 3*(1), 60-95.

Delone, W. H., & McLean, E. R. (2002). Information Systems Success Revisited. *Proceedings of the 35th Hawaii International Conference on System Sciences*, (pp. 238-249). Washington, DC: IEEE Computer Society.

Denscombe, M. (2003). The good research guide – for small scale social research projects (2nd ed.). Open University Press.

Dybå, T. (2005). An Empirical Investigation of the Key Factors for Success in Software Process Improvement. *IEEE Transactions on Software Engineering, 31*(5), 410-424.

Eason, K. (1988). Information Technology and Organizational Change. London: Tyler & Francis.

Fichman, R., & Kemerer, C. (1999). The Illusory Diffusion of Innovation: An Examination of Assimilation Gaps. *Information Systems Research, 10*(3), 255-275.

Gallivan, M. J. (2001). Organizational adoption and Assimilation of Complex technological Innovations: Development and Application of a new framework. *The DATA BASE for Advances in Information Systems, 32(3)*, 51-85.

Grady, R. B. (1997). Successful software process improvement. Upper Saddle River, N.J.: Prentice Hall.

Held, D. (1980). *Introduction to Critical Theory: Horkheimer to Habermas.* Berkley: University of California Press.

Kautz, K., Hansen, H. W., & Thaysen, K. (2001). Understanding and changing software organisations: an exploration of four perspectives on software process improvement. *Scandinavian Journal of Information Systems, 13*, 31-50.

Kotter, J. P. (2007). Leading Change: Why Transformation Efforts Fail. *Harvard Business Review, 85*(1), 96-103.

Landeström, J. (2006). *IT i Sverige 2006: en bok om trender och utveckling inom IT i Sverige*. Exido.

Mathiassen, L., Pries-Heje, J., & Ngwenyama, O. (2002). *Improving Software Organizations*. Boston: Addison-Wesley.

McFeeley, B. (1996). IDEAL: A User's Guide for Software Process Improvement (Handbook No. CMU/SEI-96-HB-001). Pittsburgh: SEI.

Moore, G. (2002). Crossing the Chasm: Marketing and Selling Technology Products to Mainstream Customers (rev. ed.). New York: Harper Collins Publishers.

Neeman, H., & Sarlin, A. (2006). Diagnosing diffusion practices of a technology supplier organization. Unpublished paper. Retrieved April 20, 2006, from http://ituniv.no-ip.org:8000/research_project/public/deliverables/H%c3%a5kan%20&%20Andreas%20-%20Research%20Project%20Paper.pdf.

Pries-Heje, J. (2003). Role Model for the Organizational IT Diffusion Process. *Proceedings of the fifth IFIP 8.6 working conference on the diffusion and adoption of information technology*, (pp. 115-130). Elsinore, Denmark.

Pries-Heje, J., & Tryde, S. (2001). Diffusion and adoption of IT products and processes in a Danish Bank. *Diffusing Software Product and Process Innovations* (M. Ardis, & B. Marcolin, Eds.), (pp. 17-34). Norwell: Kluwer Academic Publishers.

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.

The Standish Group. (1999). *CHAOS Report.* West Yarmouth, MA.

Walsham, G. (1993). Interpreting Information Systems in Organizations. Chinchester, UK: Wiley.

Weinberg, G. M. (1997). *Quality Software Management: Volume 4, Anticipating Change*. New York: Dorset House Publishing.

Yin, R. (1994). *Case Study Research*. Newburry Park, California: Sage Publication.